

here, incidentally, that Owen constructed the egg of *Dinornis maximus* to 412 by 326 mm., according to pl. cxix. p. 320 (*op. cit.*).

13. Several "models," according to Sir Walter Buller, in the possession of Mr. Mantell, jr., in Wellington (see No. 9).

Fragments of egg-shells are to be found in several Museums, as at Tring, Vienna, &c.

A very useful Bibliography, which we owe to Mr. A. Hamilton (*Tr. Pr. N.Z. Inst.* xxvi. pp. 229-257, 1893), entitled 'Materials for a Bibliography of the Dinornithidæ, the Great Extinct Birds of New Zealand, usually called Moas,' contains also a great deal about the eggs, and recently Dr. Benham has given us a small and rather incomplete bibliography (*l. c.* xxxiv. p. 151, 1902).

Royal Zoological Museum, Dresden,
December 4th, 1902.

XVIII.—*Bird-Notes from Morocco and the Great Atlas.*

By E. G. B. MEADE-WALDO.

(Plate VI.)

DURING the summer of 1901 I took a journey through the Central Provinces of Morocco and part of the Great Atlas range. The chief object of my trip was to observe the birds, and to collect such as appeared to be worth collecting. I also, however, devoted a considerable portion of my time to entomology. M. Henri Vaucher, a Swiss gentleman and naturalist for many years resident in Tangier, accompanied me as taxidermist and interpreter, and I found his knowledge of the country and his tact in dealing with the by no means easily-managed inhabitants to be simply invaluable; so that I consider that to him such success as attended our expedition is largely due. We started with the usual caravan of horses and mules, ten animals in all, and with seven Moorish servants, the whole of whom behaved well during our long journey, which commenced on May 8th and did not finish until August 21st.

We started too late in the year: all through the plains it was dead summer, everything was absolutely baked up, and the breeding-season was practically over. The birds were silent and moulting, and the heat at times was very intense—facts which applied even to the mountains so far as bird-life was concerned, though I was in good time for butterflies on the very high ground.

The country between Tangier and Rabat has been so well worked, and so much has been written about it, that I do not propose to treat of it in the following account. The route I took was inland, and really most interesting; but beyond the occurrence of the White-shouldered Imperial Eagle in the great plain-swamps of the Wad-li Koos I do not remember anything of special interest until we came to the breeding-grounds of the "Bald Ibis" (*Comatibis eremita*) in the Sallee cliffs, just north of Rabat, although we found an "Arabian Bustard" (*Eupodotis arabs*) floating, dead, in the Seboo at Mehedia. The Bald Ibis breeds abundantly in the cliffs, each bay being occupied by many pairs, and most available sites being taken up; the nests were often very close together, some ledges being quite covered with them, so that they touched each other. They were rather small and built of dry weeds, while almost all of them contained nearly full-grown young, though many birds of the year were on the wing. I saw a pale green, apparently addled, egg in one nest, and picked up some pale green egg-shells on the beach beneath the cliffs. The breeding-season must be very early, as on May 20th I shot a full-grown young bird on the wing. The parents were very wild at the nest, and shewed no apparent solicitude for their progeny. The stomachs of those we examined contained locusts, scorpions, and large centipedes. The majority of the adults pass over into the Forest of Marmora to feed. I met with this bird again at intervals throughout Morocco, and saw a colony breeding in a cliff over the Wad Moorbey at Oolad Lasara, close upon 200 miles from the sea.

The whole of the country passed through, and almost all that from Rabat to Morocco city, was cursed by a plague of

locusts, which must have had a considerable effect on the distribution of the birds, whole districts being denuded of almost every scrap of vegetation and the smaller species being entirely absent.

On leaving Rabat we came across the Rufous Swallow (*Hirundo rufula*) for the first time. Several pairs were collecting mud from the road at the South Gate of the town. I did not meet with it again until we reached the villages on the foot-hills of the Atlas, where it was common enough. Between Rabat and Fedulla, Pratincoles (*Glareola pratincola*) were breeding in all the fields after the manner of our Peewits at home—not in colonies, but in odd pairs; fallow fields were most usually chosen. On a low rocky island in the sea, separated from the mainland by a channel some 200 yards wide, an enormous colony of Buff-backed Herons (*Ardea bubulcus*) was breeding. The whole island was absolutely covered with nests; it is hard to compute the numbers of birds, but there must have been some thousands. Many of these were still building their nests on May 28th; and in the spring of last year (1902), when I passed the breeding-place on April 1st, it was quite deserted.

After leaving Fedulla we struck inland, and travelled slowly, by way of Bershid, Estat, Ben daud, Wad Gizar, and several places the names of which we could not correctly ascertain, to Beni Meskin. A great part of this country was under corn, but much of it had been ruined by locusts; parts were more or less desert, and on referring to my notes I see that Harriers and Ravens had disappeared, as well as Calandra Larks. The last two days before arriving at Beni Meskin we passed through scrubby desert, where Lesser Short-toed Larks (*Calandrella minor*) were observed; but these and the ubiquitous Crested Lark were the only Larks observed on this ground. Both Black-breasted Sand-Grouse (*Pterocles arenarius*) and Pintailed Sand-Grouse (*P. alchata*) were common and very tame; and the Cream-coloured Courser (*Cursorius gallicus*) was noticed, singly or in small flocks: it had apparently finished breeding. We saw no Bustards here; but *Eupodotis arabs* was described to us from a thick scrub-tract of *Zizyphus*

lotus and acacia a few miles away. Many gazelles (*Gazella cuvieri*) frequent this country.

In the neighbourhood of Beni Meskin the heat was intense, ranging from 116° to 95° ; and camping on the hot stones in a gale of hot wind was so unpleasant that we moved on towards the river, passing through a very nice valley of tall zizyphus and acacia, and, for the first time since leaving Rabat, coming across the Moorish Magpie (*Pica mauritanica*).

We crossed the river Wad Moorbey: this is *Oom-er-rebia* in the maps, but I believe that my spelling is correct, or as near as can be got to the Arabic sound, for the Sultan himself assured me that it was so. The river is a very fine rapid stream, with a great volume of water of a bright brick-red colour. There was little or no cultivation on its banks, which were fringed with tamarisk. There were a few very poor Arab duars on the south side, but the north side appeared almost depopulated, with nearly all the villages in ruins. We followed the south bank eastward for a short distance, and camped on a low hill at what would have been an excellent collecting-ground two months earlier in the year. A good many birds frequented this part; a low cliff was full of Bald Ibises, and a pair of Barbary Falcons had a nest and young. I saw the little light blue Tiercel with his buff nape stoop at and bind on to a Neophron that floated past the cliff, and both he and his mate used to fly at the Bald Ibises and knock them about shamefully. Little Ringed Plovers (*Aegialitis curonica*) were breeding commonly along the banks, and I have described as new* a small Sand-Martin (*Cotile mauritanica*) which was very common. These birds were in full moult, and I saw no young in the first half of June, so they must have bred very early. A Pied Wagtail from this locality (*Motacilla subpersonata*) has also been described as new; it was in pairs with nearly full-grown young, evidently bred on the banks of the river.

The most abundant bird was undoubtedly the Rufous Warbler (*Aidon galactodes*)—that is, with the exception of

* Bull. B. O. C. xii. p. 27.

Sand-Grouse, which trooped in to drink in great numbers, morning and evening; but single birds used to come in in the middle of the day, and these were almost invariably old cocks coming to saturate their breasts, so as to convey water to their young. Wherever there was sufficient bush a pair of Shrikes (*Lanius dodsoni*) was sure to occur, and also the Eared Chat (*Saxicola catarina*), which, with the exception of one male of *S. stapazina*, was the only Chat I came across until I reached the Atlas. Both the Great Tit (*Parus major*) and the Ultramarine Tit (*P. ultramarinus*) occurred in the tamarisks by the side of the water.

After spending some ten days up the river we struck off for Marrakesh. As food for our animals had become very scarce, we travelled slowly; the desert plains were very desolate, the only birds observed being the two kinds of Sand-Grouse (*Pterocles arenarius* and *P. alchata*), *Calandrella minor*, a few individuals of *Galerida theclæ*, *Cursorius galli-cus*, and the Lanner (*Falco feldeggi*).

On arriving at the mountains to the east of Rehamna we passed through a tract of high zizyphus which was full of old nests that appeared to have belonged to the common House-Sparrow (*Passer domesticus*); these nests were built of dry grass, and the young had flown some weeks previously. I found some eggs in one or two which precisely resembled Sparrow's eggs, but the nests were *not* lined with feathers, and there was no town or village within many miles. There had been some Arab tent-villages and some poor crops of barley in the winter within perhaps a mile. I have observed the Sparrow to be very independent of human dwellings in many parts of Morocco, but nowhere so much as in this out-of-the-way place.

Of the city of Morocco itself not much that is new can be written; but no one can visit it without being delighted with the wealth of bird-life in its streets and gardens. Here, as elsewhere throughout the country, the Stork abounds—Little Kestrels, Rollers, Purple Starlings, Rock-Doves, Little Owls, Scops Owls, Barn-Owls, Black Kites, Dusky Bulbuls, Mouse-coloured Swifts, White-rumped Swifts (*Cypselus koenigi*?),

Sahara Buntings, Buff-backed Herons, and hosts of other birds all being common within the city walls. The numbers of the Little Kestrel must be seen to be believed, as many thousands may be observed on the wing at one time about dusk. A pair of Falcons frequented the Kutubia, but at their great height it was impossible to identify them with certainty: I believe that they were *Falco peregrinus*, certainly they were not *F. barbarus*.

After leaving Morocco city we made for Agurgur—a kasbah most beautifully situated on the edge of a precipice—which we reached in three days. On the road I saw a family-party of Bush-Babblers (*Argya fulva*), the only examples observed—though doubtless they were common enough,—and Spectacled Warblers (*Sylvia conspicillata*) were abundant for the first time.

At Agurgur we had the luck to find the Kaid away, while the Khalifa was harvesting in the mountains some miles off, so we got a capital start. After two days' rest and some success with insects, we started eastward over the mountains and descended into the valley of the Wad Nyfys, which we followed up to Tsigidir-el-bor, a kasbah almost on the watershed, which appears to be very low here. The whole of this valley was most interesting, and although watered by the Nyfys I take it to be typical of a dry valley on the north slopes of the Atlas. All the mountains are covered with a thin scrub of arar (*Callitris quadrivalvus*), lentiscus, and juniper; and the river has a hungry look, running mainly over stones with wide stony tracts on each side; it is full of fish, two kinds of which proved to have been hitherto undescribed. There is a certain amount of cultivation and some very fine plantations of old olive-trees.

Of birds there were many, the most noticeable being the Kingfisher (*Alcedo ispida*), Grey Wagtail (*Motacilla melanope*), Little Ringed Plover (*Ægialitis curonica*), Stock-Doves and Wood-Pigeons (both very common), Cirl Buntings, Algerian Chaffinches, Great Tits, and Ultramarine Tits. But I did not see the Atlas Coal-Tit here; it apparently needs a damp mountain-forest, at any rate in the summer. The

Spotted Flycatcher was common ; but the Jay, so plentiful elsewhere, was scarce ; I saw one family-party only. I heard the Common Nightjar, and saw some individuals hawking high up on the mountain-side. Serin Finches were still breeding, and I found several nests with eggs on June 27th. There were a few pairs of the Sahara Bunting about the kasbah, rather a high elevation for them ; but I saw them much higher on Jebel Bourzegan, in M'tuga, where they were breeding in rocks at over 5000 feet.

Finding that we could not ascend the very steep climb of over 5000 feet from Gindafy with our heavily-laden pack-animals, we had to partly retrace our steps down the valley of the Nyfys, crossing which we passed westward into the valley of the Wad Amsmiz and camped in a lateral valley at a place called Sould Jedid—a Berber village with very pleasant people, and a most delightful place. The mountains here were covered with damp forest, consisting of a most luxuriant growth of all the native trees—almost impenetrable, partly owing to the steepness of the ground. Here grew what was apparently the common holly and great quantities of laurustinus. High up, where it was too steep to get them away, were some fine tracts of primæval arar and prickly oak ; above the forest was a low growth of dwarf cistus and two kinds of a very prickly plant. The mountains here are comparatively low, reaching to about 9000 feet. Bird-life was abundant, but I will only mention what appeared to me to be the most interesting species. I saw four Hawfinches on the first day I camped here, but though I was always on the look-out for the bird I never saw another. The Golden Oriole was more numerous than I have ever seen it ; it was most abundant and nesting up to 8000 feet. Moussier's Redstart occurred everywhere, and occurred as high as there was any scrub. The Atlas Coal-Tit (*Parus atlas*), which has been described as new, occurred here for the first time ; it was abundant and much commoner than either the Great Tit or the Blue Tit. Bonelli's Wood-Wren (*Phylloscopus bonellii*) was much the commonest Warbler of the woods. The Subalpine Warbler was the commonest in the

lower scrub, and the Desert Warbler (*Sylvia deserticola*) in the high cistus-scrub above the forest. Both the Moorish Woodpeckers, *Gecinys vaillanti* and *Picus mauritanicus* abounded, the former even far out on the open mountain-side. The Jay (*Garrulus minor*) and the Moorish Magpie were both very common, especially the former, the Magpie not appearing to ascend nearly so high in the mountains. The Wood-Lark (*Alauda arborea*) was fairly common on the upper edges of the forest, and this was the only place in the Atlas where I saw the Alpine Swift. Both the Robin and the Common Wren (*Troglodytes parvulus*) were abundant in the moister valleys, but it was three weeks before I could get a specimen of the latter, owing to the thickness of the wood and the impossibility of getting far enough away. The Rock-Thrush (*Monticola saxatilis*) occurred on the stony parts above the forest, and the Blue Rock-Thrush (*M. cyanus*) in the rocks below.

Of game-birds I saw only the Barbary Partridge, which positively swarmed everywhere—females with young of very different ages, *not* accompanied by the male as a rule; there were also many packs of old birds.

Birds of prey did not strike me as particularly numerous. I saw Hobbies, Sparrow-Hawks, Snake-Eagles (*Circæetus gallicus*), and a Golden Eagle being mobbed by two Bonelli's Eagles. With the exception of the *Neophron*, I saw no Vultures; that species, however, was exceedingly common. The Black Kite was always to be seen, but in no great numbers; and the Common Kestrel outnumbered the Little Kestrel of the plains. Red Kites were rare, much more so than in the mountainous districts of the north of Morocco.

From Sould Jedid we struck westward into the Immentalla valley, and spent some days there, but nothing of special interest occurred. I worked a very fine patch of forest to the west, some of it quite primæval, and also saw the only pine-trees (*Pinus halipensis*) that I met with; but, with the exception of the Honey-Buzzard, I found no bird that I had not seen on Tsaunitz Entsagauz. It was too dry for Wrens, but I saw a few Robins, and found nests of the Serpent-

Eagle and Bonelli's Eagle, and noticed an adult Golden Eagle. There were a few pairs of Sahara Buntings in the village.

Away from the river, which is here a beautiful clear stream, everything is very dry, all the mountains being apparently waterless. Finding nothing fresh, we struck into another valley running S.E. into the heart of the mountains. The track was too bad for pack-animals, so we only took what things we had on us and one very good animal lightly laden. We went up a branch of the Amsmiz river, and eventually got to what was the last hamlet on the north slope, a tiny place of about six huts called Imi Ouern. This was a capital place for insects, but birds were not very numerous.

On the stream, which we followed up to its source at about 8500 feet, we found numbers of what was apparently the Common Dipper (*Cinclus aquaticus*). I caught a nearly full-fledged young bird, which dived all about the bottom of a pool and tried to hide under the stones below; this was on July 12th. Grey Wagtails were numerous on this stream, but, strange to say, I saw no Kingfishers, although they were so common on the Wad Nyfys.

A very fine mountain which we ascended to the summit was singularly devoid of bird-life, the only birds we saw being Barbary Partridges up to about 12,000 feet, Atlas Shore-Larks up to about the same height, a few Black-eared Chats (*Saxicola catarina*), and several pairs of Pied Rock-Thrushes (the latter with nearly-fledged young). I saw a pair of Black Redstarts on the summit of this mountain. A Berber shepherd told a most reliable man who was with me that this mountain was called Tizi Gourza; but a man at Imnentalia told us, when we pointed to the mountain from a distance, that it was Jebel Ogdimt, which it should be according to Thompson's map.

From here we went westward again, gradually getting to the foot of the mountains by Tafegar and Anzoot. Between the mountains and Mogador we saw but little of interest ornithologically. There was a large migration of many kinds of the commoner birds always going on to the south, prin-

cipally of Shrikes, Bee-eaters, and Storks, nearly all young birds. One place, Hamiz de Mescala, was interesting from the quantities of Black-breasted Sand-Grouse that came to the water actually in the middle of the village street; a very few Pintailed Sand-Grouse came with them. Through the plains I did not see Moussier's Redstart, but it occurred again in the neighbourhood of Mogador.

In the list which follows I propose to record only those birds that I have noted in my diary—not all the birds observed. In the spring of 1902 I went on an expedition to the Forest of Marmora and saw much of interest; but beyond the presence of a splendid Bustard, presumably *Eupodotis arabs*, that was common throughout the forest, although not frequenting the densest parts, and the Golden Eagle, which was nesting in trees, I observed nothing that was not found elsewhere; but bird-life was abundant, and our time much too short to thoroughly investigate it on this visit; moreover, this forest is inhabited by most undesirable people.

1. *TURDUS MERULA*. Blackbird.

Common and in full song throughout July in the Atlas Mountains.

2. *MONTICOLA SAXATILIS*. Rock-Thrush.

Not numerous, but breeding in all suitable places up to a great elevation. I saw it at an altitude of 10,500 feet.

3. *MONTICOLA CYANUS*. Blue Rock-Thrush.

Frequenting kasbahs and rocks up to about 6000 feet. Not common.

4. *CINCLUS AQUATICUS*. Common Dipper.

I saw the Dipper on a branch of the upper waters of the Wad Amsmiz running down from the east of Tizi Gourza. It was common and breeding. I saw it up to some 9000 feet. There appeared to be a pair about every mile. They had young out of the nest, but unable to fly, in July.

5. *SAXICOLA CATARINA*. Black-eared Chat.

The most abundant Chat, but not really common. It

frequented low hills on the borders of the desert, and I saw a few in the Atlas.

6. *SAXICOLA STAPAZINA*. Russet Chat.

Much less abundant than the last-named, and not frequenting such arid localities.

7. *SAXICOLA LEUCURA*. Black Chat.

I only saw this bird on migration in August on Jebel Bourzegan.

8. *PRATICOLA RUBICOLA*. Stone-Chat.

Ubiquitous wherever there was a certain amount of scrub, but not ascending high in the mountains.

9. *RUTICILLA TITYS*. Black Redstart.

Occurred at the highest elevations in the Atlas.

10. *RUTICILLA MOUSSIERI*. Moussier's Redstart.

Common in the Atlas up to at least 9000 feet, in fact as high as there was any scrub. I did not see it on the foothills, or indeed below about 3500 feet; but it occurred again in the neighbourhood of Mogador.

11. *SYLVIA HORTENSIS*. Garden-Warbler.

I shot one specimen on the upper waters of the Wad Moorbey in June.

12. *SYLVIA SUBALPINA*. Subalpine Warbler.

Very common in the Atlas at elevations of between 3000 and 7000 feet.

13. *MELIZOPHILUS DESERTICOLA*. Tristram's Warbler.

Abounded in the cistus- and broom-scrub, above the forest, up to 9000 feet.

14. *PHYLLOSCOPUS BONELLII*.

This was the most common Wood-Warbler throughout the high moister woods on the north slopes.

15. *ERITHACUS RUBECULA*. Redbreast.

Common in the moister woods of the Atlas.

16. *DAULIAS LUSCINIA*. Nightingale.

I saw a few individuals in the Atlas.



17. SYLVIA CONSPICILLATA. Spectacled Warbler.

I only noticed this Warbler to be common in one district in the foot-hills of the Atlas.

18. SYLVIA MELANOCEPHALA. Sardinian Warbler.

Almost ubiquitous.

19. SYLVIA ATRICAPILLA. Blackcap.

Occasionally seen in the Atlas.

20. HYPOLAIS POLYGLOTTA. Icterine Warbler.

I saw one example in the Atlas.

21. AËDON GALACTODES.

Exceedingly common, but not ascending into the mountains.

22. ARGYA FULVA. Algerian Bush-Warbler.

I only saw one party.

23. PARUS MAJOR. Great Tit.

Common in the mountains, but I did not see many individuals above the limit of the olive.

24. PARUS ULTRAMARINUS. Ultramarine Tit.

Fairly common. I saw it up to 7000 feet.

25. PARUS ATLAS. (Plate VI.)

Parus atlas Meade-Waldo, Bull. B. O. C. xii. p. 27.

Adult male and female. Most nearly allied to *Parus michalowskii* Bogd., from the Caucasus, but differs chiefly in having the black of the fore-neck extending over the sides of the chest and (in the freshly-moulted bird) conspicuously spangled with white, with the sides of the belly and flanks dark smoky buff instead of pale buff.

	Total length.	Wing.	Tail.	Tarsus.
	in.	in.	in.	in.
♂	4.7	2.65	1.95	0.75
♀	4.8	2.65	1.95	0.75

Hab. Atlas Mountains, Morocco (July 8th, 1901).

The Atlas Coal-Tit abounds throughout the moister woods of the Atlas; it ascends as high as the limit of trees or scrub. It occurred in family-parties, with fully fledged young, in July. The old birds were in more or less heavy moult, so that it was impossible to procure really good specimens.

26. TROGLODYTES PARVULUS. Common Wren.

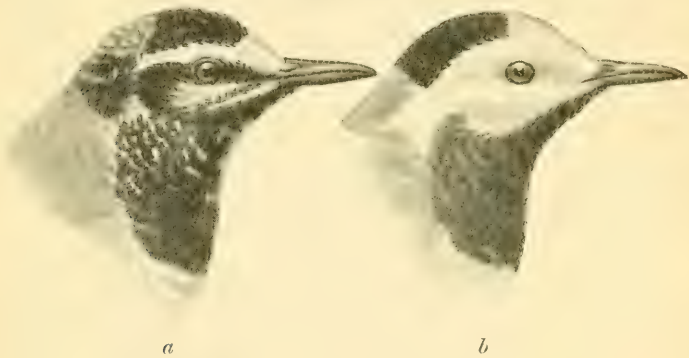
The Wren appeared to be common enough in one tract of moist forest, but I obtained only a single specimen after much perseverance.

27. MOTACILLA SUBPERSONATA. (Fig. 11, *a*.)

Motacilla subpersonata Meade-Waldo, Bull. B. O. C. xii. p. 27.

Adult male and female. Most nearly allied to *M. personata* (fig. 11, *b*), from which, however, it may be at once distinguished by having the white on the forehead only half

Fig. 11.



a. Motacilla subpersonata. b. M. personata.

as wide, 0·2 inch instead of 0·4 inch. The black is confined to the head, and does not extend beyond the nape. The median and greater secondary wing-coverts are dusky brown, with pale margins instead of white.

	Total length.	Wing.	Tail.	Tarsus.
	in.	in.	in.	in.
♂ (worn)	ca. 8·0	3·45	3·65	0·95
♀	ca. 8·0	3·6	3·8	0·95

Hab. Wad Moorbey, Zragua, Morocco (June 4th and 5th, 1901).

This Wagtail was found in family-parties on the side of the river, and was not uncommon.

28. MOTACILLA MELANOPE. Grey Wagtail.

The Grey Wagtail was common on all the streams of the

Atlas, and I saw it also about the irrigation-channels in the neighbourhood of Marrakesh.

29. *RYCNONOTUS OBSCURUS*. Dusky Bulbul.

This Bulbul, which abounds everywhere throughout the Atlas region, ascends to at least 7000 feet in the moist woods.

30. *ORIOLOUS GALBULA*. Golden Oriole.

The Golden Oriole was far more abundant in some localities in the Atlas than I have ever seen it before; it positively swarmed at Sould Jedid and on Tsauritz Entsagauz, both through the olive-region and as far up as there were trees large enough to accommodate it. I saw full-grown young in the middle of July.

31. *LANIUS DODSONI*. Grey Shrike.

A Grey Shrike, which I believe to be *Lanius dodsoni* or an allied form, is very common throughout Morocco. It does not ascend high up the mountains, but I saw a few individuals up to 3500 feet.

32. *LANIUS POMERANUS*. Wood-Chat Shrike.

The ubiquitous Wood-Chat Shrike was migrating south over the mountains in July; large numbers were young birds, but there were some adults in very worn plumage.

33. *MUSCICAPA GRISOLA*. Spotted Flycatcher.

The Spotted Flycatcher was breeding abundantly throughout the Atlas.

34. *HIRUNDO RUFULA*. Red-rumped Swallow.

I first saw this Swallow in the outskirts of Rabat, where it was breeding. I did not notice it again until just outside Marrakesh. It was very common throughout the Atlas region.

35. *COTILE MAURITANICA*.

Cotile mauritanica Meade-Waldo, Bull. B. O. C. xii, p. 27.

The Moorish Sand-Martin is nearest to *Cotile paludicola* Vieill. and *C. minor* Cab., but is much paler, the upper parts being of a greyish-brown tint devoid of gloss and the under

parts pale; the chin, throat, fore-neck, and neck pale smoky grey, and the breast and the rest of the under parts pure white.

	Total length.	Wing.	Tail.	Tarsus.
	in.	in.	in.	in.
♂ (in moult) ca.	5.0	4.0	1.5	0.4
♀	5.0	4.0	1.7	0.4

Very common on the Wad Moorbey in June. I saw no young birds—all were adults in very deep moult. I looked for banks where they had bred, but saw none.

36. *CARDUELIS ELEGANS*. Goldfinch.

The Goldfinch was common in the Atlas region, but I did not see it at any great elevation.

37. *SERINUS HORTULANUS*. Serin Finch.

Serin Finches were breeding as high in the mountains as the limit of trees. They had eggs in July.

38. *COCCOTHAUSTES VULGARIS*. Hawfinch.

The only Hawfinches which I saw were four met with at Sould Jedid.

39. *PASSER DOMESTICUS*. Common Sparrow.

I have a note that many of the Sparrows in the mountains appear to be intermediate between *Passer domesticus* and *P. salicicola*.

40. *FRINGILLA SPODIOGENA*. Algerian Chaffinch.

Common through all the Atlas region.

41. *LINOTA CANNABINA*. Linnet.

I have a note of seeing Linnets at 9500 feet.

42. *EMBERIZA CIRLUS*. Cirl Bunting.

The Cirl Bunting was common throughout the Atlas region up to a considerable elevation (about 5000 feet).

43. *EMBERIZA CIA*. Meadow-Bunting.

I saw the Meadow-Bunting at higher elevations than the last-named species.

44. *FRINGILLARIA SAHARE*. Moorish House-Bunting.

The House-Bunting was locally common throughout the Atlas. I saw it breeding in most of the kasbahs up to about

4000 feet ; and at one place (Jebel Bourzegán) it was nesting in rocks far removed from any human dwellings.

45. GALERIDA THECKLE. Crested Lark.

The Crested Lark is the commonest bird in Morocco ; it occurs almost everywhere. I saw it up to a considerable elevation in the Atlas, frequenting even comparatively small open spaces in the woods. The form that has been named *G. t. isabellina* appeared to be the most constant throughout the south of the country.

46. ALAUDA ARBOREA. Wood-Lark.

The Wood-Lark was fairly common in the Atlas. It was breeding in July. It frequented the upper parts of the forest on the edge of the scrub at about 8500 feet.

47. CALANDRELLA MINOR. Lesser Short-toed Lark.

The Lesser Short-toed Lark was common throughout the semi-deserts at the foot of the Atlas, and I saw it at intervals throughout the country south of the Wad Moorbey.

48. MELANOCORYPHA CALANDRA. Calandra Lark.

I did not see the Calandra Lark breeding south of the Wad Moorbey, although it was locally very common further north.

49. OTOCORYS ATLAS. Atlas Shore-Lark.

I saw the Atlas Shore-Lark in small flocks, with a few pairs, on Tizi Gourza up to about 10,500 feet.

50. STURNUS UNICOLOR. Purple Starling.

I noticed that this Starling, locally so common in the plains, did not reach far up into the mountains.

51. GARRULUS MINOR. African Jay.

The Jays that I brought from the Atlas have been named *Garrulus minor*, and those that I brought from the neighbourhood of Tangier *G. cervicalis*. The Jay is extremely abundant throughout the wooded portions of the Atlas, and ascends as far as the limit of trees.

52. PICA MAURITANICA. Moorish Magpie.

The Magpie is locally very common, some of the tracts of

acacia at the foot of the mountains being full of old and new nests. It does not ascend nearly so high in the mountains as the Jay. In the summer some districts were full of flocks of old birds which had not bred.

53. *CORVUS TINGITANUS*. Tangier Raven.

Common everywhere.

54. *CYPSELUS KOENIGI*. White-rumped Swift.

Locally very common. There was a large colony breeding in the archway of the house of Muley-el-Hadji in Marrakesh.

55. *CYPSELUS MURINUS*. Mouse-coloured Swift.

The common Swift of the country, breeding everywhere.

56. *CAPRIMULGUS EUROPEUS*. Common Nightjar.

This species was breeding throughout the Atlas up to a great elevation.

57. *DENDROCOPUS MAURITANUS*. Moorish Pied Woodpecker.

This Woodpecker was very common throughout the Atlas, and I may add that it abounded in the Forest of Marmora east of Rabat.

58. *GEVINUS VAILLANTI*. Algerian Green Woodpecker.

Very common in the mountains. I used to see it far up on the mountain-sides above the limit of trees.

59. *ALCEDO ISPIDA*. Common Kingfisher.

Very common and breeding on the Wad Nyfys.

60. *CORACIAS GARRULUS*. Common Roller.

This species, which abounds everywhere in extraordinary numbers, ascends to a considerable height in the mountains. I saw it breeding in old walnut-trees at an elevation of over 6000 feet at Imi Euern.

61. *MEROPS APIASTER*. Common Bee-eater.

The Bee-eater was seen in great numbers in July, frequenting the highest mountains. Large flocks passed over every night, migrating south.

62. *UPUFA EPOPS*. Hoopoe.

Found breeding in old olive-trees at Sould Jedid in July.

63. *STRIX FLAMMEA.* Barn-Owl.

As elsewhere in Morocco, this species abounded throughout the foot-hills of the Atlas.

64. *SCOPS GIU.* Scops Owl.

This Owl was very common wherever there was sufficient timber.

65. *ATHENE NOCTUA.* Little Owl.

Not common above 3500 feet.

66. *NEOPHRON PERCNOPTERUS.* Egyptian Vulture.

Very common everywhere, and the only Vulture seen.

67. *BUTEO VULGARIS.* Common Buzzard.

I saw a few individuals in the Atlas.

68. *FALCO BARBARUS.* Barbary Falcon.

Although I several times saw small Falcons that I have no doubt belonged to this species, the only pair which I was able to identify positively were those breeding at Oolad Lasara, on the Wad Moorbey.

69. *FALCO FELDEGGI.* Lanner Falcon.

I saw Lanners on many occasions in the plains.

70. *FALCO SUBBUTEO.* Hobby.

Found breeding in the Atlas in July.

71. *CIRCAËTUS GALLICUS.* Snake-Eagle.

Appears to be the most generally distributed Eagle throughout Morocco. It nests up to 7000 feet.

72. *NISAËTUS FASCIATUS.* Bonelli's Eagle.

Breeds both in trees and rocks, but I did not consider it at all common.

73. *AQUILA CHRYSAËTUS.* Golden Eagle.

I observed the Golden Eagle in the Atlas and in the Forest of Marmora; while I often saw large Eagles which I could not identify.

74. *ARDEA BUBULCUS.* Buff-backed Heron.

I have already alluded to the great colony of Buff-backed Herons breeding on a rocky island in the sea; but there are numerous other colonies where there are suitable sites, and a large number nest in the city of Marrakesh.

75. *COMATIBIS EREMITA.* Red-cheeked Ibis.

I did not see this Ibis in the mountains, but it does occur there, and breeds in the cliffs and caves of Haha at no great distance from Mogador. Personally I did not find it breeding south of the Wad Moorbey, although I occasionally saw flocks throughout the plains.

76. *ÆDEMIANUS NIGRA.* Common Scoter.

The only note of any interest made on Ducks in the south of Morocco is that the Common Scoter was seen in large flocks in Mazagan Bay in the beginning of August.

77. *COLUMBA PALUMBUS.* Ring-Dove.

Common throughout the Atlas.

78. *COLUMBA ÆNAS.* Stock-Dove.

Locally common in the Atlas.

79. *PTEROCLES ARENARIUS.* Black-bellied Sand-Grouse.

Very common on the plains and very tame. I saw a few on the lower slopes of the mountains on broken ground.

80. *PTEROCLES ALCHATA.* Pintailed Sand-Grouse.

Far less numerous and much wilder than the last-named; I saw none away from the plains.

81. *GRUS COMMUNIS.* Common Crane.

I saw the Common Crane in flocks on the plain south of the Wad Moorbey on June 9th.

82. *GIAREOLA PRATINCOLA.* Common Pratincole.

I have noted that I found the Common Pratincole nesting in the fields in the Central Provinces. I did not see it in the south of the country.

83. *CURSORIUS GALLICUS.* Cream-coloured Courser.

Seen in small numbers throughout the plains.

84. *ÆGIALITIS CURONICA.* Little Ringed Plover.

Nesting in suitable places throughout the country and up to a considerable elevation in the Atlas.

85. *TOTANUS OCHROPUS.* Green Sandpiper.

I saw an example in Marrakesh on the 13th of June.